Lower Owens River Project (LORP)

The Restoration of the Lower Owens River

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Goal of the LORP

"The goal of the LORP is the establishment of a healthy, functioning Lower Owens riverine-riparian ecosystem, and the establishment of healthy, functioning ecosystems in the other physical features of the LORP, for the benefit of biodiversity and Threatened and Endangered Species, while providing for the continuation of sustainable uses including recreation, livestock grazing, agriculture, and other activities."

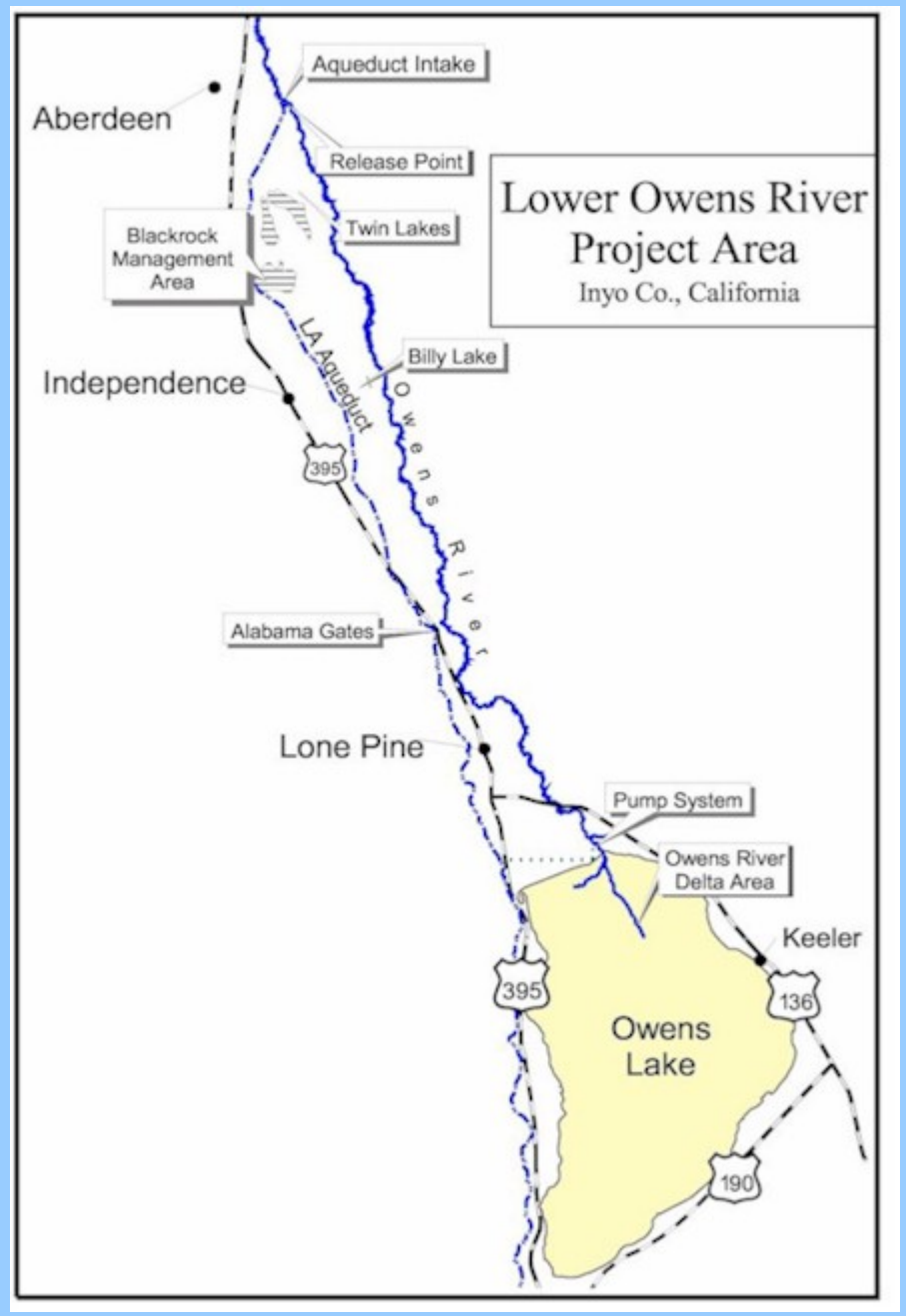
Restoration Approach

Nature is given the tools of appropriate flow and land management as well as time to self design an ecosystem that will produce sustainable habitats and will not require human intervention.

The Project is watershed based and relies on an adaptive management approach that allows resource management based on results from the monitoring program

Components of the LORP

- Riverine system
  - Rewatering of approximately 60 miles of river channel
- Blackrock wetland area
  - Creation/Restoration of approx. 1500 acres of waterfowl habitat
    - 500 acres will be flooded at any given time in average years
- Owens Delta wetland area
  - Enhancement of the Owens Delta below the pumpback station
- Off river lakes and ponds
  - Enhancement/Restoration of Twin Lakes, Goose Lake, Thibaut Ponds and Billy Lake


Lower Owens River
Project Area
Inyo Co., California
Aqueduct Intake
Aberdeen
Release Point
Twin Lakes
Blackrock
Management
Area
LA Aqueduct
Billy Lake
Independence
Owens River
395
Alabama Gates
Lone Pine
Pump System
Owens River
Delta Area
Keeler
395
136
Owens
Lake
190


AirPhotoUSA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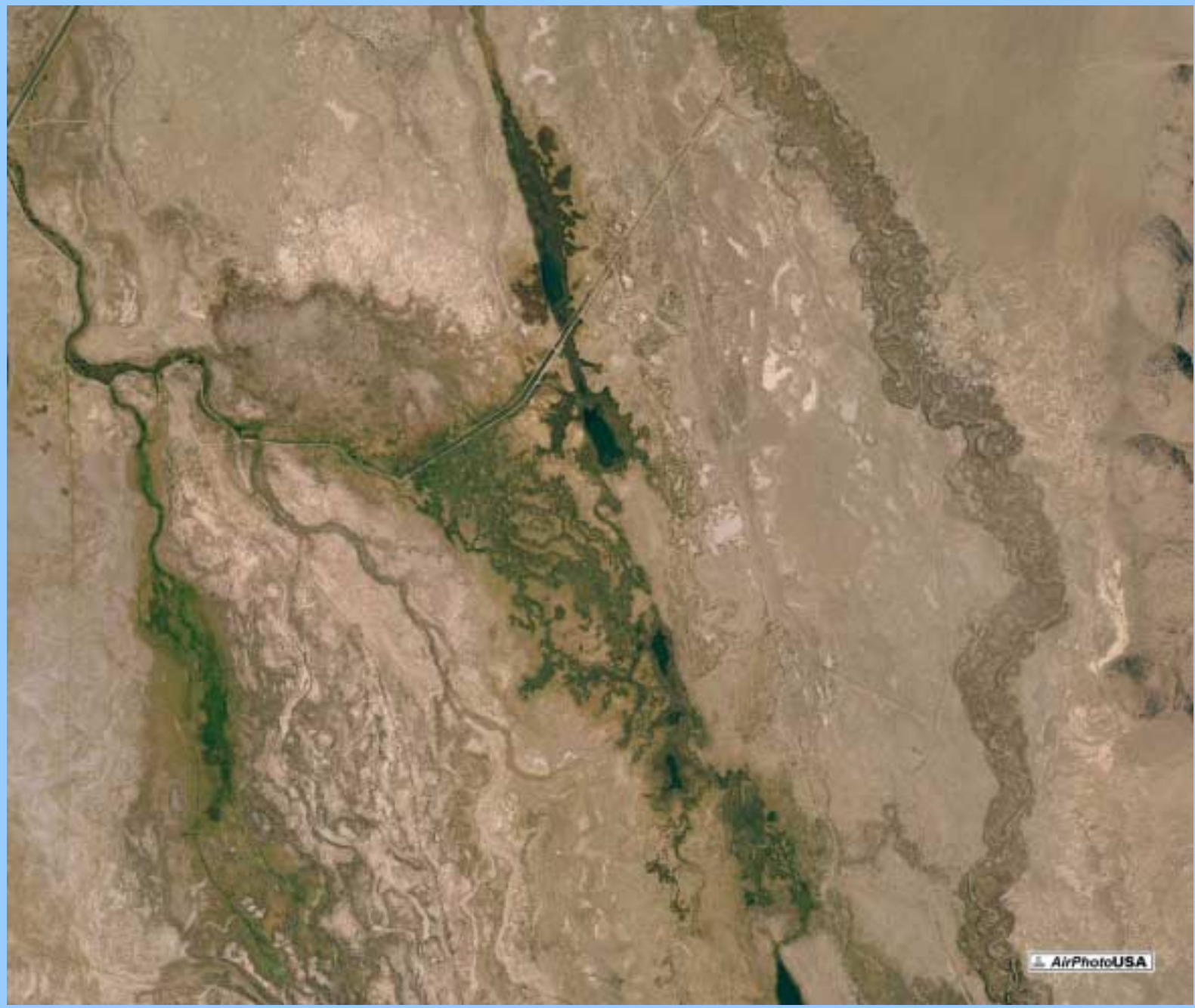
Blackrock Waterfowl Habitat Area Goal

To maintain this waterfowl habitat area to provide the opportunity for the establishment of resident and migratory waterfowl populations and to provide habitat for other native species.


AirPhotoUSA

Owens River Delta Habitat Area Goal

"The goal is to enhance and maintain approximately **325 acres of existing habitat** consisting of riparian areas and ponds suitable for shorebirds, waterfowl, and other animals and to establish and maintain new habitat consisting of riparian areas and ponds suitable for shorebirds, waterfowl and other animals within the Owens River Delta Habitat Area. Diverse natural **habitats will be created and maintained through flow and land management**, to the extent feasible, consistent with the needs of the 'habitat indicator species' for the Owens River Delta Habitat area. These habitats will be as **self-sustaining as possible**. The quantity of water that will be released below the pump back station for these purposes will be an annual average of **6 to 9 cfs** (not including water that is not captured by the station during periods of seasonal habitat flows). The portion of the **Wildlife and Wetlands Management Plan** element of the LORP Plan which addresses the Owens River Delta Habitat Area **will**, in view of the quantity of water to be released below the pump back system, **determine the amount of water needed to maintain existing habitats, to enhance existing habitats, and to create new habitats, and will determine the amount and use of seasonal habitat flows**. The plan will evaluate the feasibility and the relative environmental benefits of the enhancement of existing habitat and the establishment of new habitats. Based upon this evaluation,the plan will recommend how existing habitats should be maintained,which existing habitats should be enhanced, and how the water should be released and used so that these habitats are maintained in a healthy ecological condition."

Delta Maintenance Flows

These flows do not include any water that may pass below the pump back station during the 200 cfs seasonal bypass flow for the river (which will occur between Period 1 and Period 2)

Period 1: 25 cfs for 10 days (Mar-mid May), increases water and nutrient availability to wetlands. Improves water habitats for shorebirds

Period 2: 20 cfs for 10 days (late July-Aug), benefits vegetation and wildlife

Period 3: 20 cfs for 10 days (Sept), supplies water and nutrients at a time when they are typically limiting. Should enhance wildlife needs

Period 4: 30 cfs for 5 days (early winter), benefits wildlife especially fall and early winter migrants

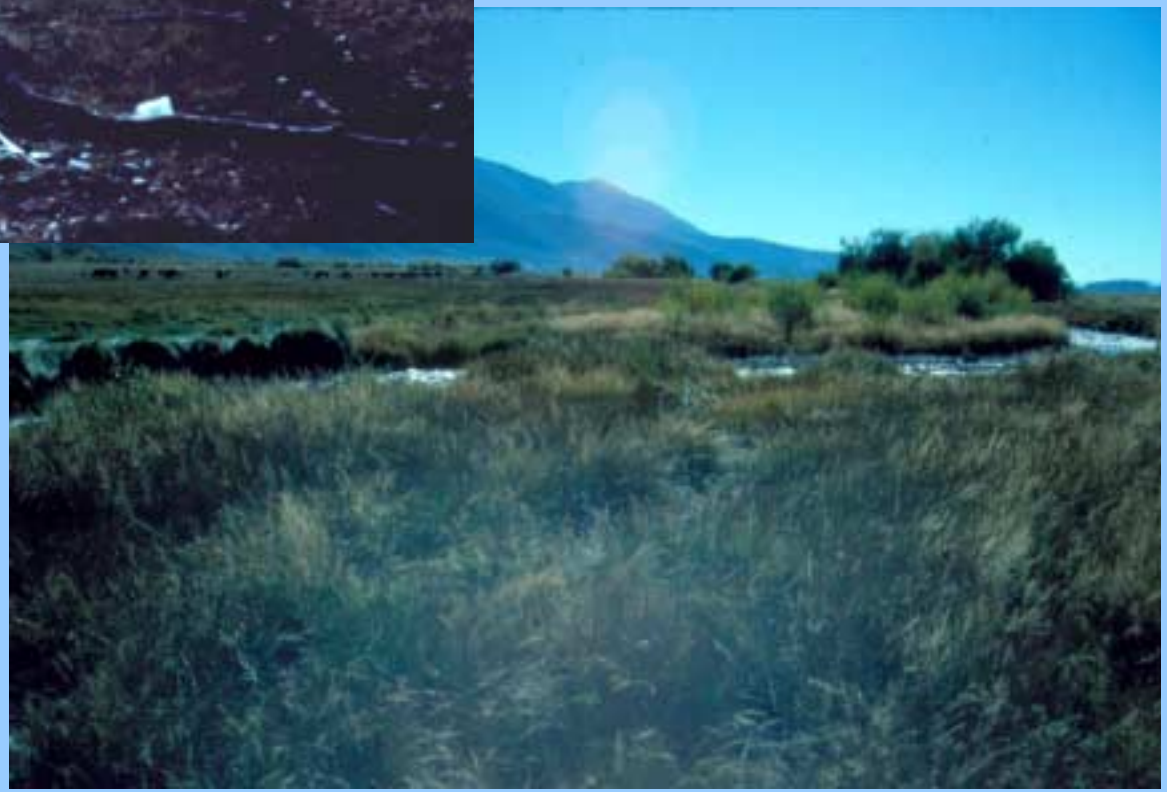
Seasonal habitat flows and wet year flows

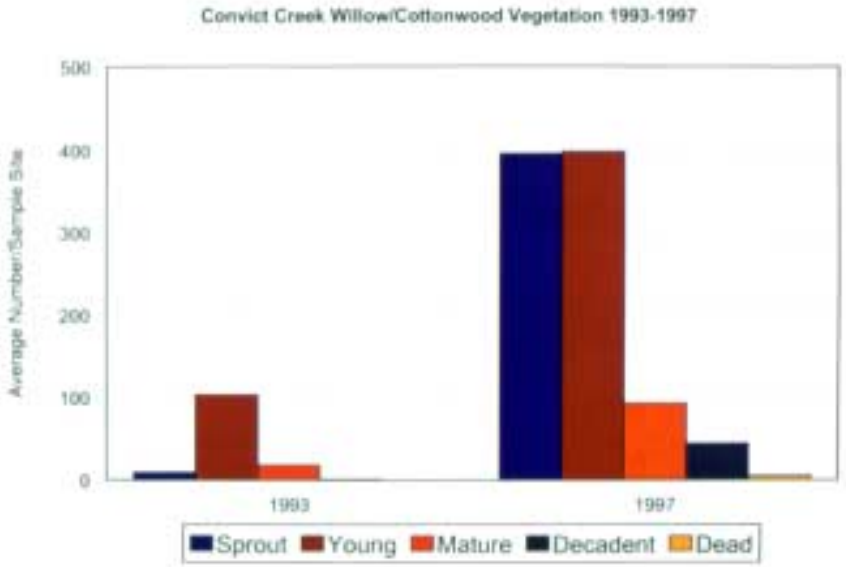
Figure 6-1. Delta Habitat Area

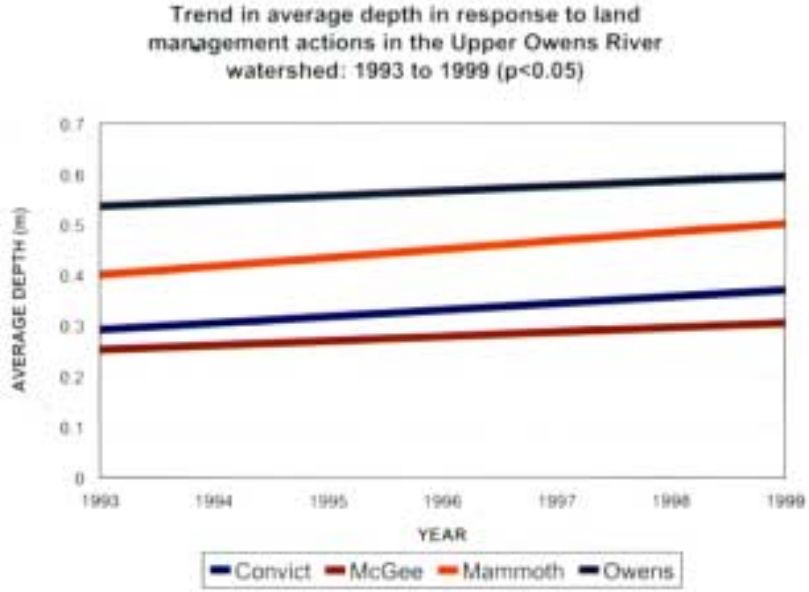
Off River Lakes and Ponds

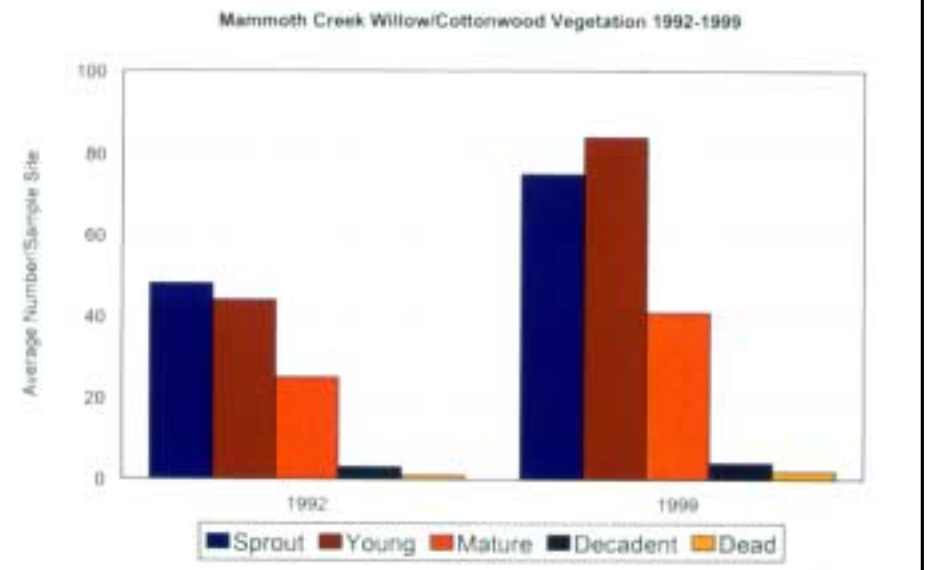
The restoration goal for off river lakes and ponds is to maintain and or establish these features to sustain diverse habitats for fisheries, waterfowl, shorebirds, and other animals.

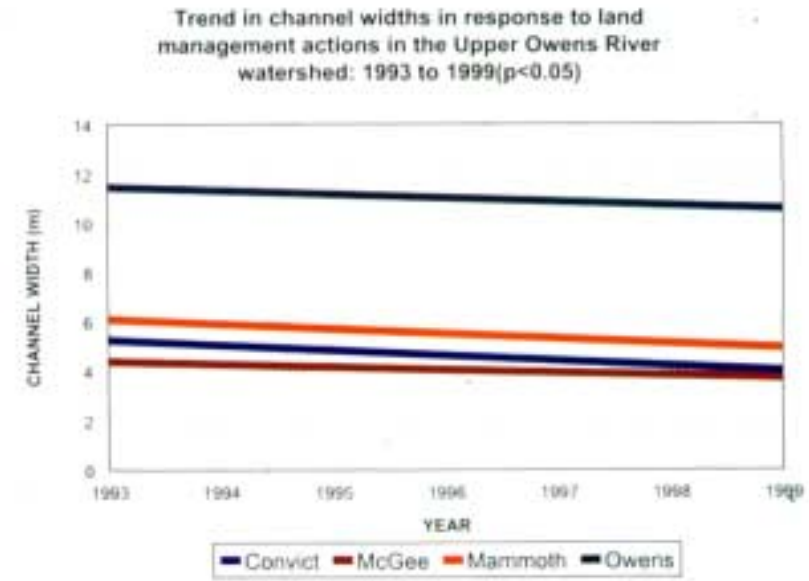
Upper Owens River Restoration Projects




Convict Creek Willow/Cottonwood Vegetation 1993-1997
Average Number/Sample Site
500
400
300
200
100
0
1993
1997
Sprout
Young
Mature
Decadent
Dead


Trend in average depth in response to land management actions in the Upper Owens River watershed: 1993 to 1999 (p<0.05)
AVERAGE DEPTH (m)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1993
1994
1995
1996
1997
1998
1999
YEAR
Convict
McGee
Mammoth
Owens


Mammoth Creek Willow/Cottonwood Vegetation 1992-1999
Average Number/Sample Site
100
80
60
40
20
0
1992
1999
Sprout
Young
Mature
Decadent
Dead


Trend in channel widths in response to land management actions in the Upper Owens River watershed: 1993 to 1999(p<0.05)
CHANNEL WIDTH (m)
14
12
10
8
6
4
2
0
1993
1994
1995
1996
1997
1998
1999
YEAR
Convict
McGee
Mammoth
Owens

Owens River Gorge Restoration

PHOTO POINT #1
UPSTREAM FROM HORSESHOE
DATE: PRE-DAM

PHOTO POINT #1
UPSTREAM FROM HORSESHOE
DATE: 1999

ECOSYSTEM SCIENCES